Semiconductors and Transistors

LEBEDEV, A.A., MAMADALIMOV, A.T., SULTANOV, N.A.

"General Parameters Of Silicon Diodes With Ni As Impurity"

Abstract: Silicon diodes compensated with nickel, with a section of negative differential resistance (NDR) of S-shape in the direct branch of the voltage-current characteristic are prepared and investigated. The diodes were created by fusing of aluminum and the alloy Au + 0.1 percent Sb at 700° C for one minute. The area of the contacts was on the order of 0.2 mm^2. Part of the specimens were produced by ordinary technology -- the contacts are located on opposite sides of the Si wafer. The thickness of the base in such diodes $W \approx 0.15$--0.25 mm. The other specimens were produced by planar technology -- all the contacts are located on one side of the wafer. In these specimens the distance between the contacts (i.e., the thickness of the base) was different -- from 0.1 to 1.5 mm. The thickness of the Si wafer was on the order of 0.4 mm. Such a location of the contacts made it possible to study the distribution of the potential along the base of the diode and the dependence of the "separation" [sryv] voltage V_s on W. The section of the NDR was observed at 77--350° K. The "separation" voltage
1/2

USSR

V_s is proportional to the square of the base line. The turn-on time of the diodes is $\lesssim$ 1 microsec, the turn-off time is ~1--10 microsecond and weakly depends on the temperature. The voltage-current characteristic of the diodes depends on the illumination. V_s is reduced by 50 percent with illumination of ~400 lux. Extrinsic photoconductivity with $h\nu > 0.4$ ev, infrared quenching and negative photoconductivity in specimens with injection at $0.7 \leqslant h\nu \leqslant 1.1$ ev are observed in silicon with nickel at 77° K. In the fundamental absorption region the photoconductivity sublinearly depends on the intensity of the light. Physicotechnical Institute imeni A.F. Ioffe, AS, USSR, Leningrad. Received by editors 9 March 1971. 8 fig. 7 ref.

3

USSR

UDC 621.315.592

ANDREYEV, A.A., ALEKSEYEV, V.A., LEBEDEV, E.A., MAMADALIYEV, M., MELEKH, B.T., REGEL', A.R., RYZHKOV, YU.F. [Institute Of Semiconductors, Academy Of Sciences, USSR, Leningrad]

"Switching Effect In Fluid Semiconductors"

Abstract: The switching effect is studied in a number of fluid semiconductors and the voltampere characteristics are shown for fluid Se (410° C), solid and fluid Sb_2S_3 (460 and 570° C) and As_2Se_3 up to softening temperature (170° C) and above (210° C). The circuit for measuring the voltampere characteristics of the switching effect is described. The high stability is emphasized of the switching effect in Se and Sb_2S_3 over a wide range of temperatures. An illustration is presented of relaxation oscillations in fluid selenium with a frequency of 10 MHz at a temperature of 230° C. The results of the observations show that the switching effect is also found in fluid semiconductors. The effect is consistently observed over a wide range of temperatures. The effect is observed for materials with various values of the absolute conductivity from 10^{-4} (Se) to $10^{-1} ohm^{-1} \times cm^{-1}$ (Sb_2S_3). By a combination of the relationships revealed, the switching effect at high temperatures carries a mainly thermal character. This statement, 1/2

USSR

however, does not exclude the electron mechanism as initiating the switching process. The studies of fluid semiconductors show that a structural phase transition is not compulsory for manifestation of the effect. 9 fig. 9 ref. Received by editors, 14 July 1971.

2/2

1/2   028   UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--OBSERVATIONS OF TRANSPORT PHENOMENA AND OF ATOMIC MOTION IN THE
   LIQUID PHASE -U-
AUTHOR-(05)-REGEL, A.R., ANDREEV, A.A., KOTOV, B.A., MAMADALIEV, M.,
   OKUNEVA, N.M.
COUNTRY OF INFO--USSR

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DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, PHYSICS

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   COPPER COMPOUND, SOLID STATE, ANTIMONY COMPOUND

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CIRC ACCESSION NO--AP0100850
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. SOME COMPDS., SB SUB2 SE SUB3,
   INSE, AND CUSBSE SUB2 HAVE BEEN STUDIED WHICH HAVE RELATIVELY LOW ELEC.
   CONDS. (IS SMALLER THAN 100 MHO-CM) IN THE LIQ. STATE. EXPTL. RESULTS
   ABOVE AND BELOW THE M.P. ARE REPORTED AND DISCUSSED FOR THE ELEC. COND.,
   HALL COEFF., THERMOPOWER AND THE THERMAL COND. RESULTS OF A STUDY OF
   THE THERMAL MOTION OF LIQ. AND SOLID GA BY NEUTRON SCATTERING ARE ALSO
   PRESENTED.

UNCLASSIFIED

USSR

UDC: 621.382.2

LEBEDEV, A. A., MAMADALIMOV, A. T., and SULTANOV, N. A.

"Investigating Diodes with S-Shaped Negative Resistance, Based on Silicon Alloyed with Sulfur"

Leningrad, Fizika i tekhnika poluprovodnikov, Vol 5, No 1, 1971, pp 22-30

Abstract: This article discusses the preparation of an investigation into light-sensitive n-silicon semiconductor diodes, dopes with sulfur, which are important in the field of optical electronics. The sulfur forms two donor levels in the upper half of the forbidden zone with activation energies of 0.18 and 0.37 ev. It also has the advantage of high diffusion factor in silicon, 10^{-8} cm^2/s at 1100° C, and can therefore be easily alloyed by the diffusion method. Experiments for the measurement of the Hall effect, the volt-ampere characteristics, and the spectral dependence of the photoelectric voltage on the photon energy of incident light are described, and the transient characteristics and oscilla-tions of the diode are measured. The results of these experimental measurements are given in curve form.

1/1

USSR

UDC: 533.69.01+533.662.013

MAMADALIYEV, N. A., RAKHMATULIN, Kh. A.

"Flow of a Two-Phase Medium With Solid Particles Around a Thin Foil"

V sb. Volny v neuprugikh sredakh (Waves in Inelastic Media--collection of works), Kishinev, Academy of Sciences of the Moldavian SSR, 1970, pp 146-152 (from RZh-Mekhanika, No 4, Apr 71, Abstract No 4B260)

Translation: A model is proposed for flow of a two-phase medium around a foil with regard to the reflection of particles from the edge of the foil. The model assumes delineation between regions of two-velocity and three-velocity motion (the third velocity is that of the solid particles reflected from the edge). For the case of flow around a wedge when the concentration of solid particles is low, a solution is given for the direct and inverse problem, the line of demarcation terminating in a straight line with an angle of inclination equal to twice the half-angle of the wedge vertex. In the case of a high concentration of solid particles, where consideration must be given to the mutual effect of the phases, an approximate solution is considered in which the effect of the reflected flux on the motion of the two-phase medium is disregarded. In this formulation, the inverse problem is considered in detail; in this regard, in the case of a straight line of demarcation, the edge of the profile is weakly concave rather than straight. V. I. Putyata.

1/1

- 17 -

Zhanov, D. K. (Tadzh. Nauch.-Issled. Otd. Energ., USSR).
Dokl. Akad. Nauk Tadzh. SSR 1970, 13(2), 22-4 (Russ). Ice
crystals of different shapes were observed in the slush ice of
rivers of the Pamir canals. These crystals were not present
simultaneously. There was a transition from one shape into
the other depending on the temp. The porosity of slush ice,
under the ice cover, was 0.42-0.68 and the av. d. 0.468, wheras
the av. d. of snow for the same period was 0.026. The reflection
factor of ice was 33%, of ice with a 1 cm cover of H_2O was 30%,
that of snow 67%. But this factor of slush ice in the canal was
37%.   GBJR

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REEL/FRAME

19891578

Acc. Nr. ATO107998 — Abstracting Service: Ref. Code:
CHEMICAL ABST.   6170   4H0425

— 124925m   Supercooling of water and some physical properties
of ice in flowing river and canal water in the Pamirs. Marindn.

tients—a 0,33% solution to 200,0 with an addition of 500 000 units of streptomycin, vit. B_{12}— 400 γ, and a 50% solution of analgyn — 2,0. 72 patients received singular injections, 5 — repeatedly with an interval of 3—4 days. Most of the patients were given this form of treatment when all other methods failed.

REEL/FRAME

19680623

THE USE OF INTRAPELVIC NOVOCAINE BLOCKS IN ISCHIORADICULITIS

Mamadzhanov, M; Mamadzhanov, Ya. M.

Intrapelvic anesthesia, according to the data of some authors is a reliable method against

talized patients received a 0,25% novocaine solution from 300,0—450,0, the ambulatory pa-
tients—a 0,33% solution to 200,0 with an addition of 500 000 units of streptomycin, vit. B_{12}—
400 γ, and a 50% solution of analgyn — 2,0. 72 patients received singular injections, 5 —
repeatedly with an interval of 3—4 days. Most of the patients were given this form of treat-
ment when all other methods failed.

REEL/FRAME

19680623

THE USE OF INTRAPELVIC NOVOCAINE BLOCKS IN ISCHIORADICULITIS

Mamadzhanov, M; Mamadzhanov, Ya. M.

Intrapelvic anesthesia, according to the data of some authors is a reliable method against

Acc. Nr.   Abstracting Service: Ref. Code
  AP0041508_ CHEMICAL ABST.   4/74   UR 0366

89690g **Electrophilic halogenation of olefins. IV. Anomalous chlorination of β-methallyl alcohol ethers.** Bochkov, I. V.; Smolyan, Z. S.; Mamakina, Z. P.; Kartashov, V. R. (Gor'k. Politekh. Inst., Gorki, USSR). Zh. Org. Khim. 1970, 6(1), 5-8 (Russ). The chlorination of $ROCH_2CMe:CH_2$ (I) (R is Me, Et, or iso-Pr) gives a mixt. of $ROCH_2C(:CH_2)CH_2Cl$ (II), $ROCHClCMeClCH_2Cl$ (III), and a small amt. of $OCH-CMeClCH_2Cl$ (IV). The products from I were identified by the prepn. of II from $H_2C:C(CH_2Cl)CH_2Br$ and RONa and the degradation of III with $CaCO_3$ to IV. The formation of II and III proceeds through the intermediate ion $ROCH_2C^+MeCH_2Cl$, which loses H^+ preferentially from the Me group giving II as the major product.   CPJR

REEL/FRAME

19751376

USSR

FAYNSHTEYN, L. B., MAMAKOV, A. A.

"The Purification of Waste Water by Electric Current"

Elektronnaya Obrabotka Materialov, No 1, 1970, pp 50-55

Abstract: After a survey of the subject of the purification of waste water by electrolysis, with special emphasis on various processes in which current is passed through both electrodes, one of these processes, the electroflotation of waste water, is treated in greater detail. The method of electroflotation, known since 1904, has principally been used for the concentration of minerals. In the past ten years it has spread to many other industries. The survey concludes with a favorable evaluation of the process of electrical flotation of waste water, and recommends measures for the consideration of its further expansion.

1/1

USSR

CHADAYEVA, N. A., MAMAKOV, K. A., and KAHAY, G. KH.

"Synthetic Method for Trialkoxysilylalkyl Esters of Trivalent Arsenic Thioacids"

USSR Author's Certificate No 368276, filed 22 Mar 71, published 73 (from Khimiya, No 20, Oct 73, Abstract No 20N514P)

Translation: Silicon-organic derivatives of trivalent As., exhibiting fungicidal properties, of the general formula $R_n As/S(CH_2)_m Si(OR'')_3/_{3-n}$ (I) (R = alkyl, aryl, heterocycle; R' = He, Et; n = 0,1,2; m = 2.3) are obtained by reacting alkyl esters of As^{3+} acids with trialkoxysilylalkylmercaptane under application of heat. Example. To 4 g $EtAs(OEt)_2$ 9.25 g $HS(CH_2)_2 Si(OEt)_3$ is added with stirring, the mixture is brought to boiling point, EtOH formed is removed, the residue is kept in vacuum over a water bath. Quantitative yield of I -- 11.3 g -- is obtained (R=Et; R'= Et; m=2, n=1). Analogously other I were obtained (Rm R', m, n, yield in %, n_D^{20}, d_4^{20}, being reported): -, Et, 2, 0, 99.9, 1.4997, 1.1898; Ph, Me, 2, 1, 99.7, 1.5414, 1.2682; Ph, Et, 2, 1, 99.9, 1.5327, 1.2312; R_n= EtPh, Me, 2, 2, 99.6, 1.5470, 1.2453; R_n= EtPh, Et, 2, 2, 99.9, 1.5450, 1.2354. I is used in preparing covers protecting optical parts from microbiological growth.
1/1

- 50 -

UDC 542.91 + 541.2 + 547.242

USSR

CHADAYEVA, N. A., MAMAKOV, K. A., SHAGIDULLIN, R. R., and KAMAY, G. Kh. (deceased)

"Synthesis and Some Properties of β-Hydroxyethyl Esters of Trivalent Arsenic Thioacids"

Abstract: New β-hydroxyethyl esters of trivalent arsenic thioacids have been synthesized by the reaction of thiol exchange and exchange of the alkoxy group by the thiol group. The reaction appears to go by the mechanism analogous to transesterification of trivalent phosphorus esters. The products are dense colorless liquids soluble in organic solvents, insoluble in water. They can be distilled in vacuum without decomposition, are stable in air to oxygen but are attacked by strong oxidizers. With acyl halides these compounds form arsenic halides and β-acetoethyl esters of thioacetic acid. Prolonged heating of β-hydroxyethyl esters of alkyl(aryl)thioarsonous and thioarsonic acids yields respective 1,3,2-oxathiaarsolane derivatives. Physical properties and IR spectra of the synthesized materials have been determined.

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USSR

UDC 542.91 + 547.26'119

CHADAYEVA, N. A., MAMAKOV, K. A., and KAMAY, G. Kh. (deceased)

"Some Properties of the Derivatives of Oxathiaarsolane"

Abstract: 2-Phenyl-1,3,2-oxathiaarsolane (I) reacts exothermically with ethylenethioglycol forming di(β-hydroxyethyl)phenyldithioarsonite (II).
In an analogous reaction 1'-hydroxy-2'-thiobis(1,3,2-oxathiaarsolanyl)-ethane with ethylenethioglycol yields tri(β-hydroxyethyl)trithioarsenite;
2-phenyl-1,3,2-oxathiaarsolane and thiophenol give (II) and diphenyl ester of phenyldithioarsonous acid. Bromination of (I) in carbon tetrachloride yields phenyldibromoarsine, reaction of acetyl bromide with (I) produces phenyldibromoarsine and β-acetoethyl ester of thioacetic acid and magnesium organic compounds reacted with (I) give tertiary arsines. Water hydrolyzes (I) to As_2O_3.

1/1

"Reaction of As (III) Thioacid Esters With Halogens and Some Halogen Containing
Compounds"

Abstract: Reaction of trivalent arsenic-thioacid esters with chlorine,
bromine, iodine chloride, sulfuryl chloride, thionyl chloride, HCl, PCl_3,
phenyldichlorophosphine and ethylphenylchlorophosphine takes place with a total
break of the As-S bond forming respective arsine halides and sulfur containing
compounds. This resulted in an assumption that a sulfur atom in thioesters is
a more reactive center than arsenic. In such a case electrophilic addition of
Hal^+ to the sulfur yields a sulfonium intermediate product which then splits
along the As-S bond due to a partial shift of electronic density from As to S.

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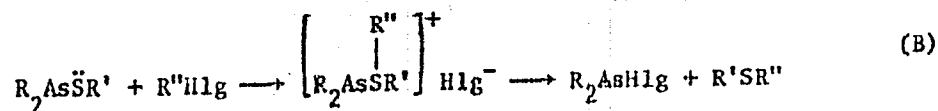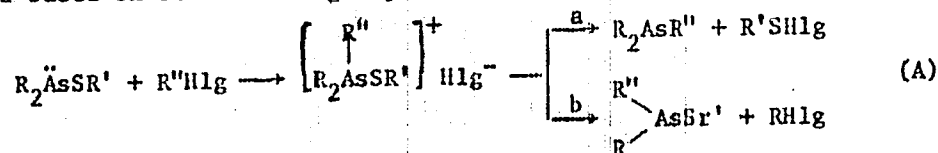USSR   UDC 547.242

CHADAYEVA, N. A., KAMAY, G. KH., MAMAKOV, K. A., OSIPOVA, M. P.

"Interaction of Thioacid Esters of Trivalent Arsenic with Alkyl Halides"

Abstract: A study was made of the interaction of thioacid esters of trivalent arsenic with alkyl halides to discover the mechanism of this reaction. The explanation is based on the following representation:

$$R_2\ddot{A}sSR' + R''Hlg \longrightarrow \left[\begin{matrix} R'' \\ \uparrow \\ R_2AsSR' \end{matrix} \right]^+ Hlg^- \longrightarrow \begin{cases} \xrightarrow{a} R_2AsR'' + R'SHlg \\ \xrightarrow{b} \begin{matrix} R'' \\ \diagdown \\ R \diagup \end{matrix} AsSr' + RHlg \end{cases} \quad (A)$$

$$R_2As\ddot{S}R' + R''Hlg \longrightarrow \left[\begin{matrix} R'' \\ | \\ R_2AsSR' \end{matrix} \right]^+ Hlg^- \longrightarrow R_2AsHlg + R'SR'' \quad (B)$$

The reaction conditions, analytical data and physical constants of some of the products are tabulated. The interaction of thioacid esters of trivalent arsenic with alkyl halides leads to breaking of the As–S bonds with the formation

1/2

- 19 -

USSR

CHADAYEVA, N. A., et al., Zhurnal Obshchey khimii, Vol XLII (CIV), No 1, 1972, pp 125-129

of the corresponding halogenoarsines and sulfur-containing compounds.

Experimental procedures, physical properties and yields are presented for three of these compounds.

2/2

Organometallic Compounds

USSR

CHADAYEVA, N. A., KAMAY, the late G. Kh., and MAMAKOV, K. A., Institute of
Organic and Physical Chemistry imeni A. Ye. Arbuzov, Academy of Sciences USSR

"Synthesis of Mixed O,S-Esters of Tervalent Arsenic Acids"

Abstract: The authors attempted to synthesize mixed O,S-esters of some
tervalent arsenic acids by reactions of ethoxydichloroarsine with sodium
ethyl mercaptide, phenylethoxychloroarsine with sodium ethyl and butyl
mercaptides, phenylethoxychloroarsine with butyl mercaptan in the presence
of triethylamine, 2-ethoxy-1,3,2-dioxaarsolane with ethyl mercaptan, 2-
chloro-1,3,2-dioxaarsolane with sodium phenyl mercaptide and 2-chloro-
1,3,2-dithiaarsolane with sodium phenolate. But in all cases instead of
the expected mixed O,S-esters the reactions gave the corresponding dis-
proportionation products, viz. esters and thioesters of tervalent arsenic
acids. Only in the case of the reaction of 2-chloro-1,3,2-oxathiaarsolane
with some sodium mercaptides did the authors succeed in isolating mixed
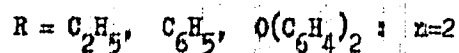O,S-esters of dithioarsenous acid.

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USSR

UDC 542.91+541.2+547.242

KAMAY, G. Kh., CHADAYEVA, N. A., MAMAKOV, K. A., Institute of Organic and Physical Chemistry im A. E. Arbuzov, Academy of Sciences USSR

"Synthesis and Properties of beta-(Pyridyl-2)-Ethyl Esters of Some Thioacids of Trivalent Arsenic."

Abstract: To produce thioesters of arsenious acid containing cyclic radicals the authors used 3 methods. 1. Reaction of chlorides of trivalent arsenic with beta-(pyridyl-2)-ethylmercaptan

$$R_nAsCl_{3-n} + (3-n)HSCH_2CH_2 \bigcirc \!\!\!\!\! N \longrightarrow R_nAs\left(SCH_2CH_2 \bigcirc \!\!\!\!\! N\right)_{3-n}$$

$$R = C_2H_5, \quad C_6H_5, \quad O(C_6H_4)_2 ; \quad n=2$$
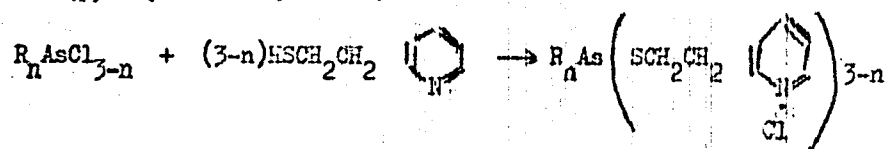
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USSR

KAMAY, G. Kh., et al, Izvestiya Akademiyi Nauk SSSR, Seriya Khimicheskaya,
No 5, May 70, pp 1092-1096

2. Reaction of chlorides of trivalent arsenic with sodium beta-(pyridyl-2)-
-ethylmercaptide

$$R_n AsCl_{3-n} + (3-n)NaSCH_2CH_2 \langle N \rangle \rightarrow R_n As \left(SCH_2CH_2 \langle N \rangle \right)_{3-n} + (3-n)NaCl$$

$$R = C_2H_5, \quad C_2H_5 \& C_6H_5: \quad n=2$$
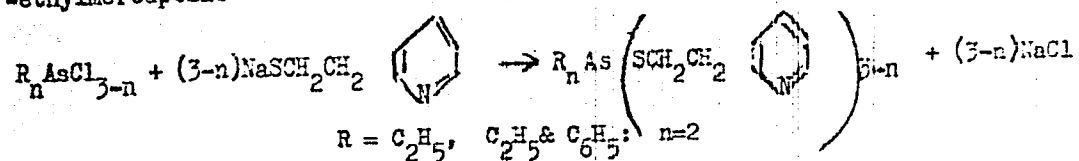
3. Reaction of alkyl esters of trivalent arsenious acids with beta-(pyridyl-
-2)-ethylmercaptan

$$R_n As(OAlk)_{3-n} + (3-n)HSCH_2CH_2 \langle N \rangle \rightarrow R_n As \left(SCH_2CH_2 \langle N \rangle \right)_{3-n} + (3-n)AlkOH$$

$$R = C_2H_5, \quad C_6H_5, \quad HN(C_6H_4)_2: \quad n=0,1,2$$

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- 80 -
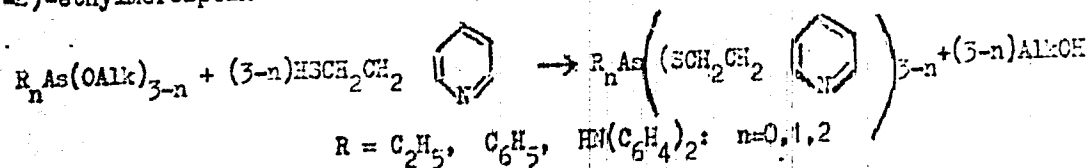
CHADAYEVA, N. A., KAMAY, G. KH. (deceased), and KARGIN, L. L.,
Institute of Organic and Physical Chemistry Imeni A. Ye. Arbuzov,
Academy of Sciences USSR

"Reaction of the Alkyl Esters of Pentavalent Arsenic Acids With
Mercaptans"

Abstract: In contrast to the reaction of trivalent arsenic acid
esters with various mercaptans, when the alkyl esters of pentavalent
arsenic acid were reacted with mercaptans two processes took place:
As (V) was reduced to As (III) and the alkoxy group was replaced by
the thio group, forming respective thioacid esters of the trivalent
arsenic. In some cases no pure product could be obtained due to the
fact that on distillation azeotropic mixtures were being formed. The
reaction was usually exothermic and consisted of mixing the reagents,
removing the solvents and redistilling the product.

1/1

M

USSR

YEFIMOVA, N. N., and MAMALUY, Yu. A., Khar'kov State University

"Magnetic Properties of Indium-Substituted Ferrites of Type M"

Moscow, Izvestiya Akademii Nauk SSSR, Seriya Fizicheskaya, Vol 34, No 5, May 70, pp 979-981

Abstract: The magnetic characteristics of ferrites grown by the formula $BaO \cdot Fe_{12-x}In_xO_{18}$ (x = 1, 2.7, 3.36) were studied. The saturation magnetization $\sigma_s(T)$ of the indium-substituted ferrites was measured as a function of temperature. The shape of the curves changes with a change in the concentration of the In^{3+} ions. The curves corresponding to x = 1 and x = 3.6 are of the Neel Q-type, and P-type curves were observed for x = 2.7 and x = 3. The introduction of nonmagnetic ions into the ferrite lattice was expected to decrease the inter- and intrasublattice exchange interactions due to a change in the number of ex-change bonds. The introduction of ions with different ion radii from the Fe^{3+} ions changes the parameters of the crystal lattice; the appearance of curves of the P-type is associated with the fact that the magnetization of the A-sublattice drops more sharply with the growth of temperature than does the B-sublattice. The

1/2

USSR

distribution of In^{3+} ions in the lattice of ferrites of type M is discussed and it is shown that indium ions probably occupy certain predominant positions at high concentrations.

DZHIBUTI, R. I., KRUPENNIKOVA, N. B., MAMASAKHLISOV, V. I. (Member of the Georgian Academy of Sciences, Deceased), and TOMCHINSKIY, V. Yu.

"Charge Form factors of Li^6, Be^9, and C^{12} Nuclei in a Three-Particle Cluster Model"

Abstract: This paper is the continuation of an earlier article by the same authors in the same journal mentioned above (Programma i tezisy 22-go yezhegodnogo soveshcheniya po yadernoy spektroskopii i strukture atomnogo yadra -- Program and Theses of the 22nd Annual Conference on Nuclear Spectroscopy and Atomic Nucleus Structures -- part 1, Leningrad, 1972, p 216; Soobshcheniya AN GSSR, 66, No 3, 1972, p 565) investigating the development of the K-harmonic method as applied to the nucleon association model. By using formulas developed in the earlier article together with the Reinal and Revai coefficients, the authors obtain in the present article expressions for the charge form factors of Li^6, Be^9, and C^{12} three-particle nuclei. The authors promise a future article comparing the results of the present paper with available experimental data.

1/1   - 59 -

USSR

KHAMIDOV, D. KH., KHAKIMOV, P. A., and MAMATALIYEV, U.

"Luminescent Cytochemical Study of the Adrenal Cortex Proteins Subjected to
Ionizing Radiation"

Translation: Concentration of high-molecular proteins in sections of the
adrenal cortex of white male rats was studied 1, 6, 18, 24 hr, and 3, 7, 14, and
30 days after γ-radiation (^{60}Co) with doses of 50, 100, 200, 400, 900, and
1200 r. The obtained results showed that the function of the cortex layer of
adrenal glands increases soon after the irradiation, even in the case of large
doses (900-1200 r). The biosynthesis of hormones by the adrenal glands was
inhibited at later dates, and it was accompanied by a quantitative decrease of
proteins in the adrenal cortex cells.

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- 9 -

UDC 591.81:577.391

USSR

KHAMIDOV, D. K., KHAKIMOV, P. A., KOLESNIKOVA, S. S., and KHANATALIYEV, U.,
Institute of Biochemistry, UzbekSSR Academy of Sciences

"Study of the Effect of Ionizing Radiation on the Mitotic Activity of Cells
in a Culture"

Tashkent, Uzbeskiy Biologicheskiy Zhurnal, No 2, 1971, pp 10-12

Abstract: Plant growth and development are stimulated by the action of com-
paratively low doses of ionizing radiation. The crop yield is likewise en-
hanced. Together with the increase in biomass, the cell dimensions are in-
creased. Similar results were obtained in the irradiation of bacteria. The
authors set out to study the effect of comparatively low doses of gamma-
radiation on the mitotic activity of cells under culture conditions. Ascitic
cancer cells (Ehrlich) and human cancer cells (HeLa) were used in the study.
The mitotic activity of the former was determined during 6-7 days of develop-
ment, after preliminary introduction of 0.3 ml (at a concentration of 60-70·
10^6 cell/ml) into each test animal. It was found that irradiation with 25
roentgen produced acceleration of the mitotic activity of both types of cells
studied (43-45% increase in the HeLa cells, 28% increase in the Ehrlich cells).
Acceleration of cell division activity was observed with irradiation doses of
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USSR

KHAMIDOV, D. K., et al., Uzbekskiy Biologicheskiy Zhurnal, No 2, 1971, pp 10-12

up to 100 roentgen. With doses of 100-300 roentgen, the number of dividing cells was equal to that of the normal cells. However, the number of cells approaching the prophase increased and the amount of metaphase lamellae remained unchanged. With a dose of 600 roentgen, some inhibition of mitotic cell division was observed. The nuclei were pyknotic. The number of granular lumps of DNA was decreased. With a dose of 3 Kr, no mitoses were observed. The acceleration of cell division under the effect of low gamma-radiation doses is attributed to an increase in content and synthesis of nucleic acids in the cell. The authors propose that low doses of ionizing radiation stimulate the transmission of the G_1 period of cells or the entry of the cells or the entry of the cells into the cellular cycle out of the G_0 period of mitotic cell division. It is possible, in the opinion of the authors, that with low gamma-radiation doses, small quantities of radiation anabolites are formed, which effect the life activity of the cells.

2/2

TITLE--CYTOFLUORIMETRIC INVESTIGATIONS OF NUCLEAR DNA PROTEINS IN CULTURED
  CELLS EXPOSED TO IONIZING RADIATION -U-

AUTHOR-(03)-KHAMIDOV, D.KH., MAMATALIYEV, U., KHAKIMOV, P.A.

COUNTRY OF INFO--USSR

SOURCE--UZB. BIOL. ZH. 1970, 14(2), 7-10

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--DNA, RADIATION DAMAGE, FLUORESCENCE, CELL PHYSIOLOGY, NUCLEUS,
  IONIZING RADIATION, COBALT ISOTOPE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--3008/0446   STEP NO--UR/9079/70/014/002/0007/0010

CIRC ACCESSION NO--AP0137537
                           UNCLASSIFIED

COMPARISON WITH LEVELS OBSER. L ... ...
TRYPSINIZATION, THE INTENSITY INCREASED 35PERCENT IN COMPARISON WITH
THAT OF CELLS TREATED ONLY WITH DNASE. COMPARISON WITH NONIRRADIATED
CONTROL CELLS SUGGESTS THAT AFTER EXPOSURE TO IONIZING RADIATION, THE
RATIO BETWEEN DNA AND PROTEINS CHANGES AND METABOLISM IN THE IRRADIATED
CELLS IS SHARPLY DISTURBED.   FACILITY: INST. BIOKHIM., TASHKENT,
USSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--27NOV70

CIRC ACCESSION NO--AP0137537
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INVESTIGATION OF THE DYNAMICS OF
                             ...... AND HELA CELLS HAS SHOWN THAT THE

USSR

MAMATKANOV, D. M., SHAPAR, A. K.

"Mathematical Models of Probabilistic Description and Prediction of Daily Schedules of Power Supply System Loads"

Primeneniye Metodov Statistiki i Mat. Modelir. v Energ. Raschetakh [Use of Methods of Statistics and Mathematical Modeling in Power System Calculations -- Collection of Works], Frunze, Ilim Press, 1973, pp 101-138 (Translated from Referativnyy Zhurnal Kibernetika, No 9, 1973, Abstract No 9V201)

Translation: A method is suggested for probabilistic description and short-term prediction of the loads on an electric power system based on the continuous periodicity and stochastic nature of the process of its formation. The results of prediction are represented in the form of arbitrary distribution functions considering the peculiarities of fluctuations during the day, the type and position of days in the annual cross section. Methods are presented for using the models suggested in practical problems and calculations are presented based on the Frunze power system.   Author's view

1/1

USSR

UDC: none

MAMATKAZIN, D. A. (Moscow)

"Programmed Trajectories of Spacecraft"

Moscow, Prikladnaya Matematika i Mekhanika, Vol. 34, No. 2, 1970, pp 373-379

Abstract: The author poses the problem of controlling the motion of a spacecraft in the central gravitational field over a space trajectory with fixed terminals. The variable trajectory parameters are approximated by power polynomials with respect to time, the coefficients of which are found from the boundary conditions. The equations of motion of the spacecraft under the action of a controlling acceleration applied to its center of mass are derived in relation to a rotating right-orthogonal system of axes (x,y,z) in which the y axis coincides with the radius vector drawn from the spacecraft center of mass to the coordinate system origin.

1/1

- 5 -

USSR

ARONOV, D. A., MAMATKULOV, R.

"Concerning the Q of Diffusion Capacitance of a p-i-n Diode on a Strong Harmonic Signal"

Abstract: The Q of diffusion capacitance of a semiconductor diode on a strong harmonic signal in the double injection mode is calculated by using expansions in a Fourier series. Analysis of the frequency dependence of the Q shows that a p-i-n diode biased on the Hall segment of the current-voltage characteristic can be used as a highly effective parametric frequency multiplier.

1/1

USSR

UDC 518:517.944/.947

MAMATKULOV, Sh.

"Convergence of the Sh. Ye. Mikeladze Method in the Problem of Integrating the Wave Equation of a Rod"

Tashkent, Vopr. vychisl. i prikl. mat. -- Sbornik (Problems of Computer and Applied Mathematics -- Collection of Works), No 2, 1970, pp 17-22 (from Referativnyy Zhurnal -- Matematika, No 7, July 71, Abstract No 7B955, by I. Shelikhova)

Translation: G. D. Leont'yev was the first to solve by the Sh. Ye. Mikeladze method the problem of stationary transverse vibrations of variable-section rods that takes into account the shear and rotational inertia of the sections. A proof is presented (for one particular case of boundary conditions) for the absolute and uniform convergence of series determining the forms of bending and shear of the axis of a rod (support) with constant cross section.

1/1

UDC 519.2

USSR

MAMATOV, M., KHALIKOV, M. K.

"Multidimensional Limit Theorems for Sums of a Random Number of Random Vectors"

Nauch. tr. Tashkent. un-t (Scientific Works of Tashkent University), 1972, vyp. 402, pp 71-81 (from RZh-Kibernetika, No 9, Sep 72, Abstract No 9V12)

Translation: Let ξ_i, $i = 1, 2, \ldots$, be the sequence of independent, identically distributed random vectors having the density of the distribution function and such that $M|\xi_1|^2 < \infty$ and $M\xi_1 = \bar{0}$; ν_λ for each $\lambda > 0$ is a random variable which is independent of the sequence ξ_i, $i = 1, 2, \ldots$ and assumes integral nonnegative values such that $M\nu_\lambda^2 < \infty$; $\nu_\lambda \xrightarrow{P} \infty$ for $\lambda \to \infty$ and $\gamma^2 = 0(\alpha)$ where $\alpha = M\nu_\lambda$, $\gamma^2 = D\nu_\lambda$, $\eta_\lambda = \xi_1 + \ldots + \xi_{\nu_\lambda}$. The asymptotic expansions of the density of the distribution function of the random vector $\eta_\lambda/\sqrt{\alpha}$ are found under certain conditional assumptions for $\lambda \to \infty$ with respect to degrees $1/\sqrt{\alpha}$ (the density of a multidimensional normal law is used as the zero term of the expansion).

1/1

UDC 519.2

USSR

MAMATOV, M.

"Local Theorem"

Nauchn. tr. Tashkent. un-t (Scientific Works of Tashkent University), 1972, vyp. 402, pp 82-86 (from RZh-Kibernetika, No 7, Jul 72, Abstract No 7V27)

Translation: A study was made of the series $\{X_n\}$ of independent identically distributed random variables such that $EX_1 = 0$ and $DX_1 = 1$. The conditions are indicated which are sufficient for convergence of the series

$$\sum_n n^{-1+\delta/2} \sup_x \left| p_n(x) - \frac{1}{\sqrt{2\pi}} e^{-x^2/2} \right|, \qquad (1)$$

where $0 < \delta < 1$, $p_n(x)$ is the distribution density of the random variable $(1/\sqrt{n})(X_1 + \ldots + X_n)$. An analogous result was obtained for the local limit theorem for lattice distributions.

Reviewer's Note. More general results were proved by P. H. Galstyan (RZh-Matematika, 1971, 12V47), who obtained the necessary and sufficient conditions for convergence of the series type (1) in the case of $0 < \delta \leq 1$.

1/1

- 2 -

USSR

UDC 519.214

MAMATOV, M. and FORMANOV, SH. K.

"Generalization of Rosen's Results for Sums of a Random Number of Independent Random Variables"

Translation: Suppose ξ_1, ξ_2, ... is a sequence of independent, indentically distributed random variables and suppose that for each $\lambda \gg 1$, ν_λ is a random variable independent of the sequence ξ_1, ξ_2, ... and taking on integral nonnegative values. Also suppose

$$S(n)=\sum_{k=1}^{n} \xi_k, \quad \alpha = M\nu_\lambda, \quad \gamma' = D\nu_\lambda < \infty, \quad \lambda > 1.$$

1/2

USSR

MAMATOV, M. and FORMANOV, SH. K., Sluchayn. protsessy i smezhn. vopr.--
Sbornik, Part 2, 1971, pp 46-51

Upper bounds are obtained for the probabilities $P\{S(\nu_\lambda)$

$\in I_\lambda$ for different systems of intervals I_λ, $\lambda \geqslant 1$ on the

assumption that $\alpha \to \infty$ as $\lambda \to \infty$. Moreover, for the case
when $D\xi_1 < \infty$, $M\xi_1 = 0$, and on the assumption that $\alpha \to \infty$ and

$\gamma = 0(\alpha)$ as $\lambda \to \infty$, conditions are obtained that are suffi-
cient for the convergence of series of the type

$$\sum_{\lambda=1}^{\infty} \varphi(\lambda) \left| P\{S(\nu_\lambda)=0\} - \frac{1}{2} \right|$$

(here $\varphi(\lambda)$ is a nonrandom, nonnegative function).

2/2

- 23 -

USSR   UDC: 519.214

MAMATOV, M., FORMANOV, Sh. K.

"Generalization of Rosen's Results for Sums of a Random Number of Independent Random Quantities"

V sb. Sluchayn. protsessy i smezhn. vopr. Ch. 2 (Random Processes and Related Problems--collection of works. Part 2), Tashkent, "Fan", 1971, pp 46-51 (from RZh-Kibernetika, No 9, Sep 71, Abstract No 9V61)

Translation: Let ξ_1, ξ_2,... be a sequence of independent identically distributed random quantities, and for each $\lambda \geqslant 1$ let ν_λ be a random quantity which does not depend on sequence ξ_1, ξ_2,... and which takes on non-negative whole-number values. Let also

$$S(n) = \sum_{k=1}^{n} \xi_k, \quad \alpha = M\nu_\lambda, \quad \gamma^2 = D\nu_\lambda < \infty, \quad \lambda \geqslant 1.$$

In this paper, estimates from above are found for the probabilities $P\{S(\nu_\lambda) \in I_\lambda\}$ for different systems of intervals I_λ, $\lambda \geqslant 1$, assuming that $\alpha \to \infty$ as $\lambda \to \infty$.

In addition, for the case where $D\xi_1 < \infty$, $M\xi_1 = 0$, and assuming that $\alpha \to \infty$ and $\gamma = O(\alpha)$ when $\lambda \to \infty$, conditions are found which are sufficient for

1/2

USSR

MAMATOV, M., FORMANOV, Sh. K., Sluchayn. protsessy i smezhn. vopr. Ch. 2,
Tashkent, "Fan", 1971, pp 46-51

convergence of series of the type

$$\sum_{\lambda=1}^{\infty} \varphi(\lambda) \left| P\{S(\nu_\lambda)=0\} - \frac{1}{2} \right|$$

Here $\phi(\lambda)$ is a non-random non-negative function. D. Sil'vestrov.

2/2   - 1 -

UDC 519.2

USSR

MAMATOV, M.

"Global Limit Theorem for Distribution Functions in the Two-Dimensional Case"

V sb. Sluchayn. protsessy i stat. vyvody (Random Processes and Statistical Conclusions--collection of works), Tashkent, Fan, 1971, pp 37-41 (from RZh-Kibernetika, No 12, Dec 72, Abstract No 12V14)

Translation: Let
$$(\xi_j, \eta_j)\; j = 1, 2, 3, \ldots)$$
be a sequence of independent identically distributed random vectors with non-degenerate distribution P having finite third moments. Let us introduce the notation
$$\mu_{k\ell} = \int\!\int x^k y^\ell P(dxdy), \quad \beta_{k\ell} = \int\!\int |x^k y^\ell| P(dxdy).$$

Without limiting the generality, it is possible to set $\mu_{10} = \mu_{01} = 0$, $\mu_{20} = \mu_{02} = 1$. Let us denote by ρ the correlation coefficient between ξ_j and η_j. By Φ_P let us denote the two-dimensional normal distribution having the same first and second moments as P. The corresponding characteristic function will have the form
$$g(s, t) = \exp\left\{ -\frac{1}{2}(s^2 + 2\rho st + t^2) \right\}.$$

1/2

- 1 -

USSR

MAMATOV, M., Sluchayn. protsessy i stat. vyvody, Tashkent, Fan, 1971, pp 37-41

and the characteristic distribution function P will have the form

$$f(s, t) = \iint e^{isx + ity} P \, (dx\,dy).$$

The distribution function of the random vector

$$\left(\frac{\xi_1 + \xi_2 + \ldots + \xi_n}{\sqrt{n}}, \quad \frac{\eta_1 + \eta_2 + \ldots + \eta_n}{\sqrt{n}} \right)$$

will be denoted by $F_n(x, y)$. In this article the theorem is proved in which the paper (RZh-Matematika, 1960, 7924) is generalized to the two-dimensional case in another form.

Theorem. If $\beta_{30}, \beta_{03} < \infty$ and for any $\varepsilon > 0$

$$\sup_{|s| > \varepsilon} |f(s, 0)| < a_1 < 1,$$

$$\sup_{|t| > \varepsilon} |f(0, t)| < b_1 < 1,$$

then

$$\iint \{ [F_s(x, y) - F_n(x, \infty)] F_n(\infty, y) - \Phi(x, y) +$$

$$+ \Phi(x, \infty) \Phi(\infty, y) \}^2 \, dx\,dy = O\left(\frac{1}{n}\right).$$

2/2

USSR

KORYACHKO, V. P., MAMATOV, Yu. A., SHUVIKOV, V. I.

"Selection of the Optimal Structure of Operational Automata of Control Machines"

Translation: Problems of selection of a structure of an operational auto- maton (OA) for an oriented digital control machine (ODCM) and the speed of each of the units are studied. It is shown that the task of selection of the optimal structure for the OA of an ODCM is equivalent to the pro- blem of linear programming.

1/1

USSR

MAMATOV, Yu. A.

"Optimization of the Operating Algorithm of an ODCM Based on the Criterion of Memory Volume"

Tr. Ryazan. Radiotekhn. In-ta [Works of Ryazan Institute of Electronic Engineering], 1972, No 36, pp 78-81 (Translated from Referativnyy Zhurnal, Kibernetika, No 1, 1973, Abstract No 1 V782 by the author).

Translation: The problem of construction of the criterion of optimization is analyzed. A method of solution of the problem is presented.

1/1

USSR   UDC: 621.396.6-181.5

KOROL'KOV, N. V., MARYSHEVA, G. I., MAMATOV, Yu. A., TSAGARELI, D. V.

"Thin Ferromagnetic Films. (Some Problems of Magnetization)"

Tonkiye ferromagnitnyye plenki. (Nekotoryye voprosy namagnichivaniya) (cf.
English above), AN SSSR, Vychisl. tsentr, Moscow, 1970, 99 pp, ill. 20 k.
(from RZh-Radiotekhnika, No 12, Dec 70, Abstract No 12V264 K)

Translation: The paper is made up of five sections: characteristics of
actual thin magnetic films, stability conditions and complete recording of
information on a thin cylindrical magnetic film with longitudinal preferred
axis of magnetization, magnetizing a thin magnetic film, investigation of
the dissipation flux of cylindrical magnetic films on an electric model,
and the process of energy transmission during magnetic reversal of a thin
magnetic film by rotation. I. M.

1/1

USSR   UDC: 8.74

KORYACHKO, V. P., MAMATOV, Yu. A., SHUVIKOV, V. I.

"Agreement of Job Algorithm and Structure of Operational Automaton of Oriented Machine"

Kibern. Tekhn. [Cybernetics Equipment--Collection of Works], Kiev, 1971, pp 45-53 (Translated from Referativnyy Zhurnal Kibernetika, No 11, 1972, Abstract No 11V572, by V. Mikheyev)

Translation: The following related problems are discussed: 1) define the algorithm, structure of operational automaton for an oriented digital machine (OA ODM) and schedule of operation of each section to minimize error probability and hold OA ODM cost below a fixed level; 2) define the algorithm, structure of OA ODM and operating schedule of each section such that the cost of the OA ODM is minimal and the probability of a failure is not over a fixed level. The tasks are presented as mathematical programming tasks in which both the goal function and the limitations are linear.

1/1

USSR   UDC: 517.9:539.3

MAMATURDIYEV, G., AZHYMUDINOV, T.

"On the Orthogonality of Eigenfunctions of the Second Boundary Value Problem
of Elasticity Theory"

V sb. Krayev. zadachi dlya differents. uravneniy s chastnymi proizvodnymi
(Boundary Value Problems for Differential Equations With Partial Deriva-
tives--collection of works), Tashkent, "Fan", 1970, pp 126-131 (from RZh-
-Matematika, No 5, May 71, Abstract No 5B511)

Translation: By the use of Green's formula and algebraic equations, it is
shown that

$$\int_{\Omega} \operatorname{div} \vec{W}_i \operatorname{div} \vec{W}_k \, d\Omega = 0, \quad i \neq k,$$

if $\vec{W}_i$ and $\vec{W}_k$ are eigenfunctions of the boundary value problem

$$\Delta \vec{W} + \omega \operatorname{grad} \operatorname{div} \vec{W} = 0, \quad 2\frac{\partial \vec{W}}{\partial n} + (\omega - 1)\vec{n} \operatorname{div} \vec{W} + [\vec{n}, \operatorname{rot} \vec{W}]|_{\Gamma} = 0,$$

where Ω is a finite region of three-dimensional space, Γ is its sufficiently
smooth boundary with outer normal n, and $\vec{W}$ is the displacement vector.
V. Buyvol.

1/1
                                    - 7 -

USSR

NIKOLAYEV, A. V., GRIBANOVA, I. N., KHOL'KINA, I. D., NORTSEVA, A. A.,
MAMATYUK, T. V.

"Phosphorus and Sulfur-Containing Sorbents. V. Organothiophosphorus Sorbents"

Novosibirsk, Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSSR -- Seriya
Khimicheskikh Nauk, No 1, 1973, pp 79-83

Abstract: Data are presented on the synthesis, physical-chemical evaluation
and sorptive power of organothiophosphorus sorbents -- cation-exchange resins
and "mixed" complexites.

Two types of phosphorus and sulfur-containing sorbents were synthesized.
The first type were cations with the functional group $-P(S)(OH)_2$. The sor-
bents of the second type were "mixed" complexites containing the cation-
exchange functional groups and $-P(S)(OR)_2$ where R are alkyls. The physical-
chemical characteristics and sorptive powers of the synthesized sorbents are
given with special attention to the selectivity of the sorbents and their
sorptive power with respect to extracting gold from acid solutions.

The "mixed" complexites were distinguished by a somewhat reduced sorption
rate apparently as a result of an increase in steric factors. For the cation-
exchange resins a small reduction in the degree of sorption of gold was

1/2

USSR

NIKOLAYEV, A. V., et al., Izvestiya Sibirskogo Otdeleniya Akademii Nauk SSR --
Seriya Khimicheskikh Nauk, No 1, 1973, pp 79-83

observed with an increase in the hydrochloric acid concentration in the aqueous
phase; for the "mixed" complexites there was some increase in the degree of
sorption in the 0.5-3.0 normal HCl range.

2/2

USSR   UDC: 517.933

MAMAYEV, L.

"Derivation of Equations for Control Systems"

Sb. nauchn. rabot aspirantov. Un-t druzhby narodov im. Patrisa
Lumumby (Scientific Works of Aspirants, Patrice Lumumba University
of International Amity--collection, Department of Physical Mathe-
matics and Natural Science) 1970, No. 7, pp 165-169 (from RZh-
Matematika, No. 3, March 71, Abstract No. 33196)

Translation: The law for control of a system with an inertial
controlling unit is determined, such that the manifold, given by
the equations $\omega_s(x,u,t) = 0$, $s = 1,\ldots,\underline{l}$, where x is the condi-
tion vector of the object and u is the condition vector of the
controlling unit, would be a stable integral manifold for
a system of differential equations describing the behavior of
the controlling system.   V. Aleksandrov

1/1

Translation: The loss coefficient ζ_{tr} was obtained by a semi-empirical method
as a function of the angles of flow in a turbine grid with an optimal step and
shockless inflow. Empirical relationships were found taking into account the
effect of the relative step and the reduced velocity λ on the coefficient ζ_{tr}.

A technique was developed for evaluating with high accuracy in turbine design
the profile losses in grids of aerodynamically perfect profiles at regimes with
$\lambda \le 0.8$. 9 ill., 13 ref. Resume.

1/1

USSR   UDC: 533.697

MAMAYEV, B. I., KLEBANOV, A. G.

"Evaluating Foil Losses in Subsonic Turbine Blading"

Tr. Kuybyshev. aviats. in-t (Works. Kuybyshev Aviation Institute), 1970,
vyp. 45, pp 209-219 (from RZh-Mekhanika, No 5, May 72, Abstract No 5B458)

Translation: The authors find the relation between the coefficient of
losses ζ_{tb} and the angles of flow in turbine blading with optimum pitch
for the case of shockless influx. Empirical relations are found which
account for the influence of relative pitch and the reduced velocity λ
on coefficient ζ_{tb}. A method is developed which can be used in turbine
design for high-accuracy evaluation of foil losses in the blading on aero-
dynamically perfect blades under conditions with $\lambda < 0.8$. Bibliography of
13 titles. Resumé.

1/1

Entomology

MAMAYEV, B. M., Institute of Evolutionary Morphology and Ecology of Animals imeni A. N. Severtsov, Academy of Sciences USSR

"On Ranges of Passively Dispersing Unspecialized Insects (With the Geographical Distribution Characteristics of Midges of the Genus Coquillettomyia Felt: Diptera, Cecidomyiidae)"

Abstract: Taxonomic problems have previously prevented study of the zoo-geography, ecology, and evolution of higher midges. The holarctic genus Coquillettomyia Felt is represented in the Palearctic by 2 holarctic and 9 palearctic species. The wide distribution of these species demonstrates that passively dispersing unspecialized insects may occupy large areas, fully utilizing ecological niches within these areas, and that isolation of such insects in the Palearctic and Nearctic may be only comparative. Zoogeographical criteria are unsatisfactory for the isolation of new genera of midges. The structure of the hypopygium affirms taxonomical membership in the genus Coquillettomyia Felt.

1/1

MAMAYEV, D.D.

"An Optimal Adaptive Reception Of Continuous Markov Signals"

Abstract: Consideration is continued of an approach to the problem of adaptive filtering of a continuous Markov signal which was proposed in a paper by R.L. Stratonovich and D.D. Mamayev (Radiotekhnika i elektronika, 1972, 17, 2, 507). The problem is resolved of obtaining the equations of optimum nonlinear adaptive filtering, coincident with the already known (basic) filtering equations of the nonadaptive case, but taken with the appraisable values of the unknown parameters entering into them a priori. In order to obtain such appraisable values, relations are derived which supplement the basic filtering equations, forming together with them a closed system of equations of optimum adaptive filtering. During modeling of the equations of adaptive filtering, an optimum adaptive receiver is synthesized which consists of a corresponding nonadaptive receiver and additional units, which accomplishes an appraisal of the unknown parameters. The proposed approach is convenient for solution of practical problems of adaptive filtering and makes it possible to use existing nonadaptive receiving devices, only supplementing the corresponding "adaptation units." A block diagram is presented of the radio engineering device accomplishing filtration of the signal considered. The author thanks R.L. Stratonovich for his comments.1 fig.6 ref.

1/1

USSR

UDC 632.1(47+57)

MAMAYEV, K.

"Microbes Protect Crops"

Moscow, Zemledeliye, No 7, 1973, pp 46-47

Abstract: Brief description of the source, method of use, and specific targets of the most effective microbiological agents developed in the Soviet Union to control plant pests and diseases: entobacterin and dendrobacillin (both derived from Bacillus thuriengiensis), arenarin (an antibiotic iso- lated from immortelle flowers), phytobacteriomycin (an antibiotic), tri- chodermin (a recently developed biological preparation), and trichotecin (a metabolite of the fungus Trichotecium roseum effective against rodents). All these preparations have been found to be harmless to plants, bees and other useful insects, warm-blooded animals, and man.

1/1

BIOLOGY
Agriculture

USSR

UDC 632.934.1(47+57)

MAMAYEV, K., and NIKIFOROV, A., Agronomists

"Aerosols and How They Are Applied"

Moscow, Zemledeliye, Vol 33, No 9, Sep 71, pp 52-53

Abstract: The aerosol method of disinfection of barns and granaries, and the aerosol method for control of insects in general are widely used in USSR. The main preparations used for the control of barn pests are technical grade hexachlorocyclohexane (HCCH) and its gamma-isomer, both in the form of 4% solutions in diesel oil. The preparations are converted into aerosols by means of aerosol generators AG-L6, AG-UD-2, Raketa, and OAN-P "Mikron", with AG-UD-2 the most effective. Granary disinfection is usually carried out about 10-15 days before storage of the grain, with the buildings hermetically sealed and then thoroughly ventilated. Smoke pots containing 90% of the gamma-isomer of HCCH, 200 and 500 g in weight are also used, with the smaller pots processing an area of 400 and the larger ones 1,000 cubic meters. The preparation dimethyl dichlorovinyl phosphate, a potent fungicide, is used for the control of flies.

1/1

UNCLASSIFIED   PROCESSING DATE--20NOV70

TITLE--T, S ANALYSIS OF WATER MASSES OF THE WORLD OCEAN -U-

AUTHOR--MAMAYEV, O.I.

COUNTRY OF INFO--USSR

SOURCE--(T, S-ANALIZ VOD MIROVOGO OKEANA) LENINGRAD, GIDROMETEOR. (20.
1970. 363 PP.

DATE PUBLISHED--------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--OCEAN, SEA WATER, EQUATION OF STATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AM0132529
                    UNCLASSIFIED

CIRC ACCESSICN NO--AM0132529

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. INTRODUCTION 3. CHAPTER I THE EQUATION OF THE STATE OF SEA WATER 7. II FUNDAMENTALS OF THE THERMODYNAMICS OF SEA WATER 42. III PARTIAL DERIVATIVES OF THE EQUATION OF STATE 78. IV THE T,S DIAGRAM AND ITS PROPERTIES 108. V ANALYTICAL THEORIES OF THE T, S CURVES 144. VI THE METHOD OF T,S ANALYSIS 236. VII THE WORLD OCEAN WATER MASS 302. CONCLUSION 336.

UNCLASSIFIED

TITLE--ON WATER DENSITY INCREASE FROM MIXING OF FOUR WATER MASSES OF THE OCEAN -U-

AUTHOR--MAMAYEV, O.I.

COUNTRY OF INFO--USSR, PACIFIC OCEAN

SOURCE--OKEANOLOGIYA, 1970, VOL 10, NR 3, PP 396-405

DATE PUBLISHED-------70

SUBJECT AREAS--EARTH SCIENCES AND OCEANOGRAPHY

TOPIC TAGS--SEA WATER, OCEAN, FLUID DENSITY MEASUREMENT, TURBULENT MIXING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
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CIRC ACCESSION NO--AP0129202
                         UNCLASSIFIED

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. WATER DENSITY INCREASE FROM WATER
MIXING IN THE OCEAN CAUSED BY NONLINEARITY OF THE EQUATION OF STATE OF
THE SEA WATER HAS BEEN STUDIED MOST INADEQUATELY AND ITS CONTRIBUTION TO
THE OCEAN'S ENERGETICS IS NOT KNOWN ALTOGETHER. WATER DENSITY INCREASE
IS BEING CONSIDERED FOR A SIMULTANEOUS MIXING OF FOUR WATER MASSES IN
THE EXCHANGE AREA OF THE KUROSHIO AND OYASHIO WATERS (THE NORTHWESTERN
PACIFIC). A SUGGESTION IS MADE TO USE A DENSITY INCREASE QUADRANGLE AS
A NOMOGRAM FOR DETERMINING DENSITY GROWTH VALUES WITHIN THE WATER MIXING
QUADRANGLE. THE PATTERN OF DENSITY INCREASE IN THE KUROSHIO OYASHIO
MIXING AREA IS COMPARED TO THE THERMOHALINE CONDITIONS OF THE AREA IN
QUESTION. THE MAXIMUM DENSITY INCREASE OF 38 TIMES 10 NEGATIVE PRIME5
G.CM NEGATIVE PRIME3 IS FOUND IN THE ISOPYCNIC LAYER BETWEEN SIGMA SUBT
EQUALS 25.8 AND 26.0; THIS LAYER FROM 50 TO 75 M DEPTH BELOW THE SEA
SURFACE IN THE NORTHEAST BECOMES GRADUALLY DEEPER SOUTHWESTWARD TO 400
M. THE MAXIMUM WATER DENSITY IS FOUND WHEN ONE THIRD OF THE SUB ARCTIC
WATER AND TWO THIRDS OF THE KUROSHIO WATER ARE MIXED. WHEN MIXING OF
THREE WATER MASSES IS CONSIDERED THE DENSITY GROWTH IS A DIFFERENCE
BETWEEN THE TRUE DENSITY OF THE SEA WATER SIGMA SUBT (S,T) AND AVERAGE
DENSITY SIGMA (S,T) DETERMINED FROM THE EQUATION OF WEIGHT AVERAGE AND
CORRESPONDING TO SOME LINEAR EQUATION OF STATE. WHEN TWO OR FOUR AND
MORE WATER MASSES ARE MIXED THE EQUATION OF STATE FOR AVERAGE DENSITY
MAY BE NONLINEAR. TOPOGRAPHIC ISOHYPSES OF FUNCTIONS SIGMA SUBT, BAR
SIGMA AND BAR SIGMA PRIME ARE COMPARED.

CIRC ACCESSION NO--AP0129202
ABSTRACT/EXTRACT--THE SECOND VALUE CORRESPONDS TO DENSITY INCREASE WHEN
 MIXING PROCEEDS WITHIN TWO MIXING TRIANGLES HAVING A COMMON SIDE, AND
 THE THIRD VALUE IS THE DENSITY INCREASE FROM MIXING WITHIN THE SAME
 AREA, ALL THE THREE FAMILIES OF THE ISOLINES DIFFER FROM EACH OTHER, AND
 THE FIRST AND THE SECOND ONES ARE NONLINEAR.   FACILITY:
 MOSKOVSKIY GOSUDARSTVENNYY UNIVERSITET IM. M. V. LOMONOSOVA
 GEOGRAFICHESKIY FAKUL'TET, KAFEDRA OKEANOLOGII.

UNCLASSIFIED

Acc. Nr.: __AP0048495__   Ref. Code: _ZLR 7037_

                                                JPRS 50052

Simplified Equation of State of Sea Water

(Abstract: "A Simplified Equation of State of Sea Water for the Range of
Low Oceanic Temperatures," by O. I. Mamayev and A. V. Shumilov, Oceanology
Department, Moscow State University; Moscow, Vestnik Moskovskogo Universi-
teta, Geografiya, No. 1, 1970, pp. 111-113)
      It is important to obtain a simplified (in comparison with the
generally used Knudsen-Ekman equation) equation of state of sea water.
Such a simplified equation was derived by one of the authors (O. I.
Mamayev, Izv. AN SSSR, Ser. Geofiz., No. 2, 1964). It had the form

$$\sigma_T = 28.152 - 0.0735T - 0.0469T^2 + (0.802-0.002T)(S-35) \qquad (1)$$

where T is temperature (°C), S is salinity (°/oo), $\sigma_T = (\rho-1) \cdot 10^3$ is
nominal density, ρ is sea water density. Equation (1) has a good ac-
curacy in comparison with other simplified equations. However, it
appeared desirable to evaluate the error in equation (1) in greater
detail because its error relative to the Knudsen-Ekman equation was quite
small only in a certain range of oceanic temperatures and salinitites.
It was found that the accuracy of equation (1) decreases considerably at

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2.   19800210

AP0048495.

low oceanic temperatures, particularly in the region of negative tempera-
tures. This is understandable if it is taken into account that the de-
pendence of sea water density on temperature and salinity deviates in-
significantly from linear in the region of low temperatures. However, an
increase in the accuracy of the simplified equation of state of sea water
in the region of maximum nonlinearity, in the region of low (including
negative) oceanic temperatures, is extremely desirable because it can be
used for studying phase transitions and thermodynamic interaction between
water and ice. An improved formula is derived for salinities $0 \leqslant S \leqslant 40"/oo$
and for temperatures in the range $-2°$ and $+2°C$.

$$\sigma_T = 28.126 - 0.0263 \ T - 0.0017 \ T^2 + (0.8072 - 0.0017T) \ (S-35)$$

The error in computing σ_T with this new equation is only one-third as
great as when the original equation is used for the particular temperature
range.

19800211

USSR

UDC 621.315.592

NAZAROV, A., MAMAYEV, S., (DECEASED), and KARYMASHAKOV, R. , A. F. Ioffe
Physico-Technical Institute and Turkmenistan Physico-Technical University

"Some Optical Characteristics of Solid Solution $2GaAs-AnSi$ As_2 Layers"

Abstract: The purpose of this paper is to examine the coefficient of reflection in $2GaAs-AnSiAs_2$ crystals as a function of the wavelength in the 2-15 micron range, at 290° K, and the spectral variation of the absorption factor of the crystals in the extreme region of the characteristic absorption at 83 and 290° K, obtained by the gas-transport reaction method. The electrical measurements showed that all the different samples investigated were of hole-type conductivity and had high hole concentrations. Curves for the spectral variations of the reflection and absorption factors are plotted, and charts are given of the characteristics of various combinations of $2GaAs$ and $ZnSiAs_2$.

The optical width of the forbidden zone in the $2GaAs-ZnSiAs_2$ crystals and in the original $ZnSiAs_2$ was also found.

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Optical

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UDC: 539.1.073.3

ALEKSAKOV, G. N., KOL'TSOV, I. M., MAMAYEV, V. L., ROZOV, B. S., Moscow
"Order of the Red Banner of Labor" Engineering Physics Institute

"A Precision Deflecting Device"

Moscow, Otkrytiya, Izobreteniye, Promyshlennyye Obraztsy, Tovarnyye Znaki,
No 2, Jan 72, Author's Certificate No 324600, Division G, filed 3 Dec 70,
published 23 Dec 71, p 148

Translation: This Author's Certificate introduces a deflecting device
for coding graphic information which contains a scanning mirror with
electromagnetic drive, and an interferometer device for measuring dis-
placements of the scanning beam. As a distinguishing feature of the
patent, construction is simplified, the overall dimensions of the device
are reduced, and accuracy is improved by fastening the scanning mirror on
a point support and making the optical reflectors of the interferometers
in the form of triple prisms located on the mounting of the scanning
mirror, while the current coils of the drive are made in the form of two
mutually perpendicular semicircles fastened to the mirror mounting and

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ALEKSAKOV, G. N. et al., Soviet Patent No 324600

located in the gap of a permanent magnet whose pole pieces are concentric spheres.

2/2

- 142 -

TITLE--RING CURRENTS AND NUCLEAR MAGNETIC RESONANCE IN PORPHYRINS -U-

AUTHOR-(04)-MAMAYEV, V.M., PONOMAREV, G.V., ZENIN, S.V., YEVSTIGNEYEVA,
   R.P.
COUNTRY OF INFO--USSR

SOURCE--TEOR. EKSP. KHIM. 1970, 6(1), 40-6

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY, BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--NUCLEAR MAGNETIC RESONANCE, PORPHYRIN, PROTON, PYRROLES

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/2133   STEP NO--UR/0379/70/006/001/0040/0046

CIRC ACCESSION NO--AP0125717
                              UNCLASSIFIED

CIRC ACCESSION NO--AP0125717
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. METHOD OF R. MC WEENY FOR CALCN.
  OF PI ELECTRON CURRENT IN AROMATIC MOLECULES WAS MODIFIED FOR
  PORPHYRINS.   DISTRIBUTION OF RING CURRENTS OF PI ELECTRONS AND THEIR
  CONTRIBUTIONS TO CHEM. SHIFTS OF NH, BETA H, MESO PROTONS, AND ME
  PROTONS OF PORPHYRINS IWTH CO SUB2 ET AND ME GROUPS IN THE FORM OF
  DICATIONS AND FREE BASES WAS CALCD. ON FORMING THE DICATION, THE PI
  ELECTRON CURRENT ALONG THE INTERNAL CONJUGATION RING INVOLVING NITROGEN
  ATOMS IS LOWERED, THE OVERALL RING CURRENT BEING HIGHER BY 10PERCENT.
  INTRODUCING AN ELECTRON ACCEPTOR SUBSTITUTENT IN THE BETA POSITION
  ENHANCES PI ELECTRON CURRENT THROUGH C N BONDS OF THE CORRESP. PYRROLE
  RING AND SIMULTANEOUSLY LOWERS THE OVERALL PI ELECTRON CURRENT.
  FACILITY: MOSK. INST. TONKOI KHIM. TEKHNOL. IM. LOMONOSOVA, MOSCOW,
  USSR.

UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--18SEP70
TITLE--SYNTHESIS OF SULFUR CONTAINING SPIROPYRIMIDINE BARBITURIC ACIDS -U-

AUTHOR-(02)-BOROVIK, V.P., MAMAYEV, V.P.

COUNTRY OF INFO--USSR

SOURCE--KHIM.-FARM. ZH. 1970, 4(1) 32-5

DATE PUBLISHED-------70

SUBJECT AREAS--BIOLOGICAL AND MEDICAL SCIENCES

TOPIC TAGS--SULFUR COMPOUND, DRUG PRODUCTION, BARBITURATE

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1985/1644   STEP NO--UR/0450/70/004/001/0032/0035

CIRC ACCESSION NO--AP0101699
                        UNCLASSIFIED

CIRC ACCESSION NO--AP0101699
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. TITLE SPIROBARBITURIC ACIDS ARE
    PREPD. FROM BARBITURIC ACIDS OR N-SUBSTITUTED BARBITURIC ACIDS, UREA,
    AND AN AROMATIC ALDEHYDE, FOR TESTS OF THEIR PHYSIOL. ACTIVITY. UREA
    (3.6 G), 75 ML ACOH, 6.36 G BZH, AND 3.6 G 2.THIOBARBITURIC ACID HEATED
    30 MIN AT 130DEGREES, GAVE 98PERCENT
    SPIRO(2-OXO-4,6,DIPHENYLHEXAHYDROPYRIMIDINE-5, 5 PRIME-(2 PRIME,
    THIOBARBITURIC ACID)), M. 225-7DEGREES (ACOH). ALSO PREPD. WERE
    SPIRO-(2-THIOXO-4,6,DIPHENYLHEXAHYDROPYRIMIDINE 5,5 PRIME BARBITURIC
    ACID), 76.5PERCENT, M. 245-7DEGREES (DMF-H SUB2 O);
    SPIRO-(2-THIOXO-4,6,DIPHENYLHEXAHYDROPYRIMIDINE 5,5 PRIME (1 PRIME, 3
    PRIME, DIMETHYLBARBITURIC ACID)), 98PERCENT, M. 243-4DEGREES (ACOH); AND
    SPIRO-(2-THIOXO-4,6,DIPHENYLHEXAHYDROPYRIMIDINE 5,5 PRIME (2 PRIME,
    THIOBARBITURIC ACID)), 96PERCENT, M. 214-17DEGREES (AQ. DMF). NMR AND
    IR SPECTRAL DATA ARE GIVEN.

UNCLASSIFIED

USSR   UDC 547.712.22:547.654:547.659.2

MAMAYEV, V. P., LYUBIMOVA, Ye. N. (DECEASED), Institute of Organic Chemistry,
Novosibirsk, Siberian Department, Academy of Sciences USSR

"Pyrimidines, XXII. The Interaction of Benzaldisurea with   Indanone and it's
O- and S-Analogs"

Abstract: The authors performed condensation of benzaldisurea with α-indanone,
3-cumaranone and 3-thionaphthenone in an alcohol solution in the presence of
HCl and in a solution of acetic acid. The α-indanone in both cases yielded the
expected 2-oxo-4-phenyl-1,2,3,4-tetrahydro-5H-indano [1,2-d] pyrimidine, the
structure of which is presented in the article. 3-cumaranone forms primarily
2-benzal-3-cumaranone plus about 10% 2-oxso-4-phenyl-1,2-dihydrobenzofuro [3,2-d]
pyrimidine. 3-thionaphthenone, when condensed with benzaldisurea in acetic
acid, small quantity of a material with the composition $C_{23}H_{18}N_2O_2S$.

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USSR

SHKURKO, O. P., BARAM, S. G., MAMAYEV, V. P., Institute of Organic Chemistry
of the Siberian Department of the USSR Academy of Sciences, Novosibirsk

UDC 547.853.1'221:542.944.3:543.422

"Pyrimidines. XXI. Synthesis of 4(6)-substituted 2-fluoropyrimidines"

Abstract: The synthesis of 2-fluoropyrimidine (I) and its 4(6)-substituted
derivatives (II-X) is described, and a study is made of their reactivity and
the effect of the nature of the substituents on the mobility of the fluorine
atom in nucleophilic substitution. The 4(6)-substituted derivatives are
obtained by the action of cesium fluoride on the corresponding 2-chloropyrimi-
dines in aprotonic bipolar solvents. Spectral and nuclear magnetic resonance
data are presented which confirm the picture of the fluoropyrimidines obtained.
The experimental procedures and yields are given for the reaction of chloro-
pyrimidines with cesium fluoride and the separation of 2-fluoropyrimidine,
2,4-difluoropyrimidine, 2-fluoro-4-methylpyrimidine, 2-fluoro-4,6-dimethyl-
pyrimidine and 2-fluoro-4-methoxipyrimidine and the isolation of 2-fluoro-4-
-phenylpyrimidine,2-fluoro-4-methyl-6-phenylpyrimidine,2-fluoro-4,6-diphenyl-
pyrimidine, 2-fluoro-4-dimethylaminopyrimidine and 2,4,6-trifluoropyrimi-
dine.

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UNCLASSIFIED   PROCESSING DATE--11DEC70

1/2   010
TITLE--COMPARATIVE ANALYSIS OF THE HYDROCARBON COMPOSITION OF FRACTIONS OF
HYDROGENATED GASOLINE OF THERMOCRACKING AND STRAIGHT RUN GASOLINE -U-
AUTHOR-(05)-RISOV, B.YA., MAMAYEVA, K.N., SMIRNOV, N.P., BERG, G.A.,
KELBIN, M.A.
COUNTRY OF INFO--USSR

SOURCE--NEFTEPERERAB. NEFTEKHIM. (MOSCOW) 1970, (6), 59

DATE PUBLISHED------70

SUBJECT AREAS--PROPULSION AND FUELS

TOPIC TAGS--CHEMICAL ANALYSIS, HYDROCARBON, GASOLINE, THERMOCRACKING,
HYDROGENATION, PETROLEUM CATALYTIC REFORMING

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY FICHE NO----FD70/605060/C04 STEP NO--UR/0318/70/000/006/0059/0059

CIRC ACCESSION NO--AP0144347
UNCLASSIFIED

CIRC ACCESSION NO--AP0144347
ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT.   THE COMPN. OF THE TITLE FRACTIONS
WAS SIMILAR ENOUGH TO PERMIT THE USE OF THE DEEP HYDROFINED FRACTION OF
THERMOCRACKING AS STOCK FOR CATALYTIC REFORMING.   FACILITY:
NOVO-UFIMSK. NPZ, USSR.

UNCLASSIFIED

USSR

UDC 616.33+616.342]-002.44-085.849.112-073.97

CHISTYAKOVA, N. S., SKURIKHINA, L. A., MAMAYEVA, Z. K., and ARAPOVA, A. D., Central Clinical Hospital, 4th Main Administration, Ministry of Health USSR, Moscow

"Dynamics of the Electrogastrogram During Comprehensive Therapy of Peptic Ulcer Including the Use of Microwaves"

Moscow, Voprosy Kurortologii, Fizioterapii i Lechebnoy Fizicheskoy Kul'tury, No 4, 1972, pp 341-344

Abstract: Electrogastrographic examination of 30 peptic ulcer patients showed increased electrical activity in most cases of duodenal ulcer in the acute and recurrent form, stages 1 and 2 in a state of exacerbation. Electrical activity was decreased in some patients suffering from stage 2 recurrent and chronic forms. Microwave therapy including medication normalized or improved gastric electrical activity. It also contributed to the relief of pain, disappearance or subsidence of dyspeptic phenomena, and cicatrization of the ulcer. No changes were noted in the stomach biopotential of patients treated with medication alone.

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- 60 -

UNCLASSIFIED

1/2   036   PROCESSING DATE--30OCT70

TITLE--GAS DISCHARGE PHENOMENA STUDIED DURING THE CONTINUOUS MAKING AND
    BREAKING OF A CONTACT BETWEEN SOLID SURFACES --U--

AUTHOR-(02)-MAMBETOV, D.M., KNYAZEVA, N.P.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 191(2), 326-9

DATE PUBLISHED------70

SUBJECT AREAS--CHEMISTRY, MATERIALS, PHYSICS

TOPIC TAGS--GAS DISCHARGE, POLYMER, PLASTIC FILM, FLUOROCARBON RESIN,
    GLASS, FLUORESCENCE/(U)FTOROPLAST FLUOROCARBON RESIN

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/1082   STEP NO--UR/0020/70/191/002/0326/0329

CIRC ACCESSION NO--AT0124739
                    UNCLASSIFIED

UNCLASSIFIED   PROCESSING DATE--30OCT70

CIRC ACCESSION NO--AT0124739

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE GAS DISCHARGE EFFECTS OBSD.
BETWEEN POLYMER FILMS (E.G., RUBBER-ROSIN-ZNO COMPN. (I), PHOTOSENSITIVE
GELATIN, AND FTOROPLAST (II)) IN CONTACT WITH A ROTATING GLASS (A
FRICTION PAIR) WERE STUDIED IN A SPECIAL TESTING APP. FLUORESCENCE WAS
OBSD. IN THE SPACE FORMED BETWEEN THE I-GLASS (MARKEDLY ADHESIVE) AND
II-GLASS SURFACES (NO ADHESION); HOWEVER, THE FLUORESCENCE INTENSITY OF
THE LATTER PAIR WAS 1-10 THAT OF THE FORMER.   FACILITY: INST.
FIZ. MAT., FRUNZE, USSR.

UNCLASSIFIED

USSR   UDC. 539.3

PELEKH, B. L., MAMCHUR, 1. L., L'vov

"One Contact Problem for a Transversely Isotropic Cylindrical Shell of Finite
Length"

Kiev, Prikladnaya Mekhanika, Vol 9, No 6, Jun 73, pp 41-46.

Abstract: The contact problem of interaction of a rigid ring of rectangular
cross section seated with a certain interference on a cylindrical, trans-
versely isotropic shell of finite length is studied. General equations are
produced for the cases when the ends of the shell are free and rigidly
clamped. The distribution of contact pressures is studied as a function of
the relative length of the ring, relative thickness and shear compliance of
the shell.

1/1   - 123 -

USSR   UDC 537.311.1

ABDULLAYEV, G. B., Academician of the Academy of Sciences Azerbaydzhan SSR,
ALIYEV, G. M., MEKHTIYEVA, S. I., MAMEDALIYEVA, G. G., GADZHIYEV, F. B.,
DZHALILOV, N. Z., and ABDINOV, D. Sh., Institute of Physics of the Academy of
Sciences Azerbaydzhen SSR, Baku

"On the Origin of Hole Conduction in Selenium"

Moscow, Doklady Akademii Nauk SSSR, Vol 194, No 4, 1 Oct 70, pp 798-800

Abstract: The type of conductivity of amorphous selenium with different degrees
of crystallinity and also of monocrystalline selenium before and after deoxygeni-
zation was studied to obtain information on the origin of its hole conduction
and to clarify the possibility of producing selenium with electron conduction.
It is noted that it has been previously assumed that oxygen atoms in selenium
cause its hole conduction by producing acceptor levels but that direct data
supporting this assumption is practically nill. It is stated that the elec-
trical properties of selenium are not associated with the presence of periodi-
city in the lattice but are basically determined by the short-range order; this
short-range order therefore determines the width of the forbidden zone and con-
sequently the concentration of natural free electrons and holes. Under amorphi-
zation of the material there occurs a grouping of atoms around the defects such

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that admixtures which are active in the crystalline state become inactive in the
amorphous state. Under deoxygenization of polycrystalline hexagonal selenium
the conductance at a given temperature reduces by a factor of 1000; i.e., is
approximately 100 times greater than in the case of single crystalline selenium.
This is attributed to two factors: (a) in the production of single crystals of
selenium the selenium is cleaned of oxygen admixtures; and (b) oxygen atoms in
polycrystalline samples, by reducing the intermolecular potential barriers,
cause a growth in the mobility of current carriers during the motion of current
carriers. The change in the electrical properties of single crystals of selenium
under deoxygenization is attributed to the entry of oxygen atoms in the selenium
lattice.

2/2

1/2   027   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--CHANGE IN THE THERMAL CONDUCTIVITY OF AMORPHOUS POLYMERS DURING
   THEIR TRANSITION FROM THE VITREOUS TO THE HIGHLY ELASTIC STATE -U-
AUTHOR-(03)-MAMEDALIYEVA, G.G., ABDINOV, P.SH., ALIYEV, G.M.

COUNTRY OF INFO--USSR

SOURCE--DOKL. AKAD. NAUK SSSR 1970, 190(6), 1393-5 (PHYS CHEM)

DATE PUBLISHED--------70

SUBJECT AREAS--MATERIALS, CHEMISTRY

TOPIC TAGS--THERMAL CONDUCTIVITY, AMORPHOUS POLYMER, TEMPERATURE
   DEPENDENCE, SELENIUM, POLYVINYL CHLORIDE, PHENOLPHTHALEIN, POLYAMIDE
   RESIN, VISCOELASTICITY

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--2000/0709   STEP NO--UR/0020/70/190/006/1393/1395

CIRC ACCESSION NO--AT0124379
                        UNCLASSIFIED

CIRC ACCESSION NO--AT0124379
ABSTRACT/EXTRACT--(U) GP-0-   ABSTRACT. THE DEPENDENCE OF THERMAL COND.
(LAMBDA) ON TEMP. WAS STUDIED FOR SE, POLY(VINYL CHLORIDE),
PHENOLPHTALEIN AND POLYAMIDE RESINS IN THE 20-110DEGREES RANGE.   CHANGES
IN LAMBDA DURING THE TRANSITION FROM THE GALSSY TO THE VISCOELASTIC
STATE ARE CLASSIFIED AS FOLLOWS: (1) SMALL CHANGES IN THE MOL. FREE
PATH (L), K., AND PHONON PROPAGATION RATE (V) CAUSE ONLY SMALL CHANGES
IN LAMBDA DUE TO MOL. VIBRATIONS (LAMBDA PRIME) AND TO MOL. ROTATIONAL
MOTION (LAMBDA PRIME PRIME), SINCE LAMBDA EQUALS LAMBDA PRIME PLUS
LAMBDA PRIME PRIME; (2) L, D., AND V CHANGE AND LAMBDA PRIME DECREASES
SO FAST THAT LAMBDA CHANGES ARE ALMOST WHOLLY DEPENDENT ON LAMBDA PRIME
CHANGES; (3) CHANGES OF L, D., V, AND THEREFORE OF LAMBDA PRIME ARE
COMPENSATED FOR BY THE DECREASE OF LAMBDA PRIME PRIME SO THAT LAMBDA
REMAINS NEARLY CONST.   FACILITY: INST. FIZ., BAKU, USSR.

UNCLASSIFIED

Ref. Code:
CR 0296

O. Mamedniyazov

ON CANNIBALISM OF MOSQUITO LARVAE OF THEOBALDIA
(DIPTERA, CULICIDAE) GENUS

Theobaldia (Allotheobaldia) longiareolata Macq. larvae show cannibalism vividly.
It is an interesting fact in the biology of this species.

REE /FRAME
19770018

USSR   UDC: 616.921.5-092.9:612.015.348

MAMEDOV, A. A., Doctor of Medical Sciences, YUSUFKHANOV, A. K., Junior Scientific Associate, MUSTAFAYEVA, T. I., Graduate Student, Laboratory of Biochemistry of Viruses, Azerbayduzhan Scientific Research Institute of Virology, Microbiology, and Hygiene imeni G. M. Musabekov

"Shift in the Free Amino Acid Content in the Blood Serum of White Mice During Experimental Influenza"

Abstract: The content of some 17 free amino acids in the blood seri of 100 healthy and infected white mice was determined by paper chromatography. The tests were repeated 3 to 6 times. Lysine, alanine, and valine were present in the greatest quantities (62.55, 50.3, and 44.3 mcg/ml, respectively). The content of arginine, serine, histidine, asparagine, proline, and methionine was lowest (9.98, 6.24, .6.65. 17.86, 19.9, and 16.63 mcg/ml, respectively). Content of the remaining eight amino acids was intermediate, ranging from 20.12 to 34.15 mcg/ml. In the infected mice, the content of individual amino acids was somewhat lower. In particular, there was a sharp drop in the content of essential amino acids. The quantitative change in free amino acid content contradict

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- 42 -

USSR

MAMEDOV, A. A., et al, Azerbaydzhanskiy Meditsinskiy Zhurnal, No 1, Jan 71, pp 61-64

assumptions that there is a lack of coordination in the exchange of amino acids and the other components of nitrogen metabolism. The data provide improved insight into the mechanism of protein metabolism during infectious processes and indicate potential directions for research on methods which will make it possible to normalize and stabilize this breakdown.

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UNCLASSIFIED   PROCESSING DATE--18SEP70

1/2   021
TITLE--SYNTHESIS OF OPTICALLY ACTIVE POLY(MENTHOXYALKYL) AND POLY
(MENTHOXYCARBONYL) POLYSILOXANES -U-
AUTHOR-(04)-ANDRIANOV, K.A., VOLKOVA, L.M., KLABUNOVSKIY, E.I., MAMEDOV,
A.A.

COUNTRY OF INFO--USSR

SOURCE--VYSOKOMOL. SOEDIN, SER. B 1970, 12(1), 6-10

DATE PUBLISHED-------70

SUBJECT AREAS--CHEMISTRY

TOPIC TAGS--SILOXANE, POLYCONDENSATION, OPTIC ACTIVITY, CHEMICAL
SYNTHESIS, ORGANOSILICON COMPOUND

CONTROL MARKING--NO RESTRICTIONS

DOCUMENT CLASS--UNCLASSIFIED
PROXY REEL/FRAME--1984/0924   STEP NO--UR/0460/70/012/001/0006/0010

CIRC ACCESSION NO--AP0055622
UNCLASSIFIED

2/2 . 021
CIRC ACCESSION NO--AP0055622

ABSTRACT/EXTRACT--(U) GP-0- ABSTRACT. THE HYDROLYTIC POLYCONDENSATION OF MESI(OET) SUB2 CH SUB2 CH SUB2 OR (R IS MENTHYL) WITH 3PERCENT HCL SOLN. AT 50-60DEGREES GAVE (ROCH SUB2 CH SUB2 SIMEO) SUBN (HOCH SUB2 CH SUB2 SIMEO) SUBM. THE POLYCONDENSATION OF ROICH SUB2) SUB3 SIMECL SUB2 IN THE PRESENCE OF NAHCO SUB3 AND A SMALL AMT. OF H SUB2 O GAVE 77.6PERCENT (RO(CH SUB2) SUB3 SIR PRIME1 O) SUBN (I) (R PRIME1 EQUALS ME). SIMILARLY, O(SIME SUB2 CH SUB2 CH SUB2 CO SUB2 R) SUB2 (II) (OSIMECH SUB2 CHMECO SUB2 R) SUBN, (OSIMECH SUB2 CH SUB2 CO SUB2 R) SUBN, (OSIME (CHMECO SUB2 R) SUBN (III), I (R PRIME1 EQUALS ET. OR PH), (ROCH SUB2 CH SUB2 SIMEO)SUBN, (ROCH SUB2 CH SUB2) SIO SUB1.5)SUBN, (RO(CH SUB2) SUB3 SIO-SUB1.5) SUBN, (O SUB1.5 SICH SUB2 CHMECO SUB2 R) SUBN, AND O SUB1.5 SICH SUB2 CO SUB2 R) SUBN WERE PREPD. ALL THESE POLYSILOXANES ARE OPTICALLY ACTIVE AND (EXCEPT III) DO NOT DECOMPD. AT 200DEGREES-2 MM; II IS DISTILLABLE AT 205DEGREES-05 MM.

USSR   UDC 612.822.8:612.397.81:612.143

MAMEDOV, A. M., Institute of Normal and Pathological Physiology, USSR
Academy of Medical Sciences, Moscow

"Electronic Digital Computer Data on Functional Relations and Phase Shifts
in the Stress Rhythm of the Projection Zones of the Cortex and Hypothalamus
During the Production of Pain"

Moscow, Doklady Akademii nauk SSSR, No 1, 1973, pp 242-245

Abstract: The purpose of the study was to determine the nature of the inter-
action of the rabbit posterior hypothalamus with the sensorimotor, temporal,
and occipital regions of the cortex in response to intermittent pain pro-
duced by electroshock. The 4- and 7-Hz rhythm was subjected to cross-
correlation analysis and its slow oscillations were compared with the phase
shifts and cross-correlation coefficients in the brain structures under
study. Analysis of the dynamics of the cross-correlation parameters of the
stress rhythm showed that repeated pain lowered the energy level of the
cortex and weakened its functional relations with the hypothalamic emotio-
genic zone whose excitability was greatly increased. The changes in the
different cortical regions in relation to the hypothalamus varied, the most
significant occurring in the sensorimotor projection region.
1/1

disturbed and aggressive. The data obtained by EEG measurements indicated
that the level of functioning of the cortex was lowered. This reduced the
regulatory action of the cortex on the subcortical formations with the result
that a persistent excitation of the reticular formation and the hypothalamus
was produced. An interrelation of this type beings about pathological shifts
in the functioning of various systems of the organism, specifically that of the
cardiovascular system.
l/l

- 31 -

USSR   UDC 612.822.8:612.397.81:612.143

ANOKHIN, P. K., Member Academy of Sciences USSR, SHUMILINA, A. I., and
MAMEDOV, A. M., Institute of Normal and Pathological Physiology, Academy of
Sciences USSR, Moscow

"Characteristics of the Statistical Parameters of the EEG Stress Rhythm of
the Brain Cortex and Subcortical Formations Under Pain Stress Conditions"

Abstract: Measurements by means of a multichannel electroencephalograph
were carried out on unanesthetized rabbits in which a pain stress was pro-
duced by subjecting a hind leg to the action of an electric current. The
EEG data were subjected to a cross-correlation analysis on being fed into

UDC: 534.2

USSR

MAMEDOV, A. M.

"The Speed of Sound in Water"

Za tekhn. progress (Toward Technical Progress), 1972, No 12, pp 21-22 (from RZh-Fizika, No 5, May 73, abstract No 5Zh542 by V. Ye. Gordeyev)

Translation: The speed of sound in water is calculated by a method which does not require knowledge of specific heats at constant pressure and constant volume. Use is made of the fact that the coefficients of heat conduction and viscosity, and also the expression for the speed of sound in water, can be represented in a form analogous to the equation of state. The paper gives the results of calculations of the speed of sound at pressures up to 1000 bars and temperatures from 50 to 300°C.

1/1

1/2   021   UNCLASSIFIED   PROCESSING DATE--30OCT70
TITLE--INHIBITOR OF MECHANICAL DEGRADATION OF POLYMERIC ADDITIVES IN
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AUTHOR-(02)-MAMEDOV, F.N., MIRZOYEV, A.A.

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TITLE--SYNTHESIS AND STUDY OF HEXAMETHYLENIMMONIUM COMPOUNDS AS BACTERIDES
   -U-

AUTHOR-(04)-SHAPILOV, O.D., MAMEDOV, F.N., POTAPENKO, T.G., OSIPYAN, V.T.

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